Inhibition of IL-13 production by a calcium channel blocker in human leukemic Jurkat T cell line

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Introduction: Interleukin-13 (IL-13) is a Th2-type cytokine which plays an important role in airway inflammation and allergic reactions. Verapamil, a calcium channel blocker, has been widely used in treatment of cardiovascular diseases. Besides the anti-inflammatory and anti-allergic properties of verapamil have been shown. For instance inhibition of mucus secretion and inflammation by verapamil in allergic asthma has been demonstrated. In this study the effect of verapamil on IL-13 production in human leukemic Jurkat T cell line has been evaluated in vitro.
Methods: The human leukemic Jurkat cells were cultured in complete RPMI medium and then incubated with different concentrations of verapamil (0.001-1000 μg/ml).The level of IL-13 secreted in the cell culture supernatants was measured with enzyme-linked immunosorbent assay (ELISA) kits.
Results: Verapamil significantly reduced IL-13 production in Jurkat cells, dose-dependently, compared to untreated control cells.
Conclusion: According to the results of this study, verapamil considerably decreased the IL-13 secretion in Jurkat T cells. Verapamil with its inhibitory effect on IL-13 production may be useful in relieving the IL-13- induced respiratory inflammation. Therefore verapamil along with its long-term usage in cardiovascular problems might have suppressive effect on airway inflammation and could probably be used as an effective mediator for the treatment of inflammatory mediated diseases.

Keywords: Jurkat cells; Verapamil; IL-13